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serves also for the absorption of the one wave, leaving the other free to act.

The following note, "On the Course of the diurnal Fluctuations of the Barometer," by James P. Espy. A.M., of Philadelphia, was communicated by Dr. Apjohn.

"It is a law of inertia, that if a body is forced upwards, it will react and press on its support, more than its natural gravity; and if it is permitted to descend, it will press on its support less than its natural gravity, and the increase and diminution of pressure will be proportional to its velocity.

"Moreover, if a body is permitted to descend with a certain velocity, and then retarded, it will, when retarded, press more on its support than its natural gravity, and that in proportion to the rapidity of its retardation.

"This principle will explain the four fluctuations of the barometer which occur every day.

"Just before sunrise, when the atmosphere is neither becoming hotter nor colder, the barometer will indicate the natural weight of the air, which we may call a mean; as the sun rises the air will begin to expand by heat, and the whole atmosphere will be lifted up by this expansion, and by its reaction will cause the barometer to rise; and this will be the greatest, at the time when the air is receiving the most rapid accessions of heat, which must take place before the hottest time of the day, when the air is becoming neither hotter nor colder. On this principle, then, the maximum day fluctuation will take place between daylight in the morning and the hottest time of the day, and this corresponds with the fact; for this maximum, which amounts to more than the tenth of an inch, takes place about nine or ten o'clock, A. M.

"At the hottest part of the day, when the air is neither expanding nor contracting, it is manifest that the barometer will stand again at a mean. Soon after this, however, the air

will begin to contract from diminishing temperature, and at the moment of the most rapid acceleration of contraction, the barometer will stand at its day minimum, which will probably be late in the afternoon ; and it is found in fact to be from four to five o'clock. From this time the rapidity of the downward motion of the air from contraction begins to diminish, and the barometer of course begins to rise ; and at the moment when it is most rapidly retarded in its contraction, the barometer will be at its maximum night fluctuation, and will again be above the mean, but not so much as the day max.

“ This max. is found to occur about ten or eleven o'clock, P. M. The air will now go on contracting more and more slowly, until about daylight, when it will be at rest, and the barometer will again be at a mean.

“ This theory was given by me to the *Journal of the Franklin Institute*, and published ten or twelve years ago.

“ I ventured in that paper to predict, notwithstanding some alleged observations at St. Bernard's Hospital to the contrary, that it would be found by more careful observations that the morning max. fluctuation would be greater in lofty situations on the sides of mountains, provided they were not very lofty, than on the plain below.

“ For it is manifest, that there will be not only a reaction at these lofty situations, (a little less, it is true, than below,) but some of the air will be lifted up, by the expansion of the air below, above the upper place of observation ; which would in all probability more than compensate the diminished reaction at moderate elevations.

“ This prediction has been entirely verified by Lieutenant-Colonel Sykes's observations in India, and this verification may be considered as a strong proof of the correctness of the theory. It is quite probable, that max. day fluctuation occurs later at considerable elevations than on the plain below.

“ The theory would lead us also to suppose, that at very

great elevations, where the reaction is very minute, only two fluctuations would be found in the day: the maximum at about two o'clock, P. M., when most air would be above the barometer; and the minimum at daylight in the morning, when least air would be above it; but I know of no observations to confirm or refute these deductions."

Mr. Ball brought under the notice of the Academy the fact, that the ordinary sturgeon of the Dublin markets is an undescribed species. He stated that Mr. Thompson of Belfast, and Professor Agassiz, concurred with him in this opinion, and he proposed to call it *Accipenser Thompsoni*, purposing, if permitted, to give figures and full descriptions in a future number of the Proceedings.

A notice of an unpublished Irish coin of Edward IV. was read by A. Smith, M.D., M.R.I.A.

"Within the last month some workmen were employed in cleaning one of the city drains in the Cross Poddle, and a few coins were found. Among them was one of no intrinsic value, and apparently of no interest whatever. It is made of brass, and was originally plated with silver, traces of which still remain. On one side it has a crown within a circle of pellets, outside which, in place of a legend, are crosses and roses alternately; on the other side it has the common type—a cross, with three pellets in each quarter; the legend is defaced. It weighs nearly five grains, and is now in the cabinet of Lieutenant-Colonel Weld Hartstonge.

"This little coin bears no evidence in itself which would enable us to say to what king's reign it should be appropriated, or even to what country. But on referring to an Act passed in the second year of Edward IV., at a parliament held in Dublin, we find it enacted, 'that a coyne of copper mixed with silver, be made within the Castle of Dublin, having on one side the print of a cross, and on the other part a crown, of which four shall be taken for a penny; and that the said